Form 1511-2
(February 1989)

United States Department of the Interior
Bureau of Land Management

AMENDMENT OF REQUEST FOR APPLICATION/MODIFICATION OF ASSISTANCE AGREEMENT

PAGE 1 OF 1 PAGES

1 AMENDMENT/MODIFICATION NO
1

2 EFFECTIVE DATE
7/1/03

3. REQUISITION NO

4 ISSUED BY

Martina R. See
BLM - Oregon State Office
Portland, OR

5. ADMINISTERED BY *(If other than Item 4.)*

6 NAME AND ADDRESS OF RECIPIENT (No., street, *county, state, and ZIP*)

Paul Dailey, Chair
Smith River Watershed Council
22101 Lower Smith River Road
Reedsport, OR 97467-9733

(✓)

7A AMENDMENT OF REQUEST FOR APPLICATION NO.

7B DATED

8A. MODIFICATION OF ASSISTANCE AGREEMENT NO.
HAA021E00

8B DATED
July 2002

9 THIS ITEM ONLY APPLIES TO AMENDMENTS OF REQUEST FOR APPLICATION

☐ The above numbered Request is amended as set forth in Item 10 The hour and date specified for receipt of Applications ☐ is extended, ☐ is not extended.

Applicants must acknowledge receipt of this amendment prior to the hour and date specified in the Request or as amended, by one of the following methods' a) By completing Items 6 and 13. and returning ____ copies of the amendment. b) By acknowledging receipt of this amendment on each copy of the Application submitted; or c) By separate letter or telegram which Includes a reference to the Request for Application and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF APPLICATIONS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR APPLICATION. If by virtue of this amendment you desire to change an application already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the Request for Application and this amendment, and is received prior to the hour and date specified.

10. DESCRIPTION OF AMENDMENT/MODIFICATION *(attach additional pages if needed)*

Amend section III (Authority) part A (Jobs-in-the-Woods) of Assistance Agreement # HAA021E00 to read as follows: Jobs-in-the-Woods funding, as approved in annual appropriations legislation, authorizes the Secretaries of Agriculture and Interior to limit competition for watershed restoration contracts as part of the "jobs-in-the-Woods" Program to entities in historically dependent areas in the States of Washington, Oregon, and northern California that have been affected by reduced timber harvesting on Federal Lands. Annual "Jobs in the Woods" appropriations are considered as legislative authority to provide funding for watershed restoration projects to individuals and entities in historically timber-dependent areas. The Smith River Watershed Council operates within the heart of a historically timber-dependent area and in conjunction with BLM, will provide support and stimulation to the local community through the Jobs-in-the-Woods Program.

Prepared by Glenn R. Harkleroad, Assistance Representative.

Except as provided hewn. all terms and conditions of the document referenced in Item 7A or 8A above, as heretofore changed, remain unchanged and in full force and effect.

11. ACCOUNTING AND APPROPRIATION DATA *(If required)*

12. IMPORTANT: Recipient ✔ is not, ☐ is required to sign this document and return _ copies to the issuing office.

13A. NAME AND TITLE OF SIGNER *(Type or print)*		14A. NAME AND TITLE OF ASSISTANCE OFFICER *(Type or print)* Martina R. See	
13B. RECIPIENT/APPLICANT *(Authorized Signature)*	13C. DATE SIGNED	14B. UNITED STATES OF AMERICA BY Martina R. See *(Signature of Assistance Officer)*	14C DATESIGNED 6-15-03

FORM 1511-1

United States Department of the Interior
Bureau of Land Management

ASSISTANCE AGREEMENT

1. AGREEMENT NO.
HAA021E00

2. TASK ORDER NO.
BASE AGREEMENT

3. TYPE OF AGREEMENT *(Check one)*
☐ GRANT
☒ COOPERATIVE AGREEMENT

NOTE: By signing this document, the recipient accepts this agreement and agrees to perform in accordance with all the enclosed terms, conditions, and documents attached hereto.

4. NAME ADDRESS AND PHONE NO. OF ASSISTANCE OFFICER

STEVEN D. SHAPIRO
BUREAU OF LAND MANAGEMENT
333 SW FIRST AVE.
PORTLAND, OR 97204
PHONE 503-808-6221

5. NAME, ADDRESS AND PHONE NO. OF RECIPIENT

PAUL DAILEY
SMITH RIVER WATERSHED COUNCIL
22101 LOWER SMITH RIVER ROAD
REEDSPORT, OR 97467-9733
PHONE: 541-271-5848

6. NAME, ADDRESS AND PHONE NO. OF ASSISTANCE REPRESENTATIVE

GLENN HARKLEROAD
BL M- COOS BAY DISTRICT
1300 AIRPORT LANE
NORTH BEND, OR 97459
PHONE: 541-751-4361

7. NAME, ADDRESS AND PHONE NO. OF RECIPIENT'S PROJECT MANAGER

SAME AS NO. 5 ABOVE

8. PROGRAM STATUTORY AUTHORITY

PL106-113, PL104-208,PL106-393, PL106-291

9. STARTING DATE

1 JULY 2002

10. EFFECTIVE DATE

1 JULY 2002

11. COMPLETION DATE

30 JUNE 2007

12. TYPE OF RECIPIENT *(Check one)*
☐ STATE
☒ ~~LOCAL GOVERNMENT~~
☐ INDIAN TRIBAL GOVERNMENT
☐ EDUCATIONAL INSTITUTION
☐ INDIVIDUAL
☐ FOR-PROFIT ORGANIZATION
☐ NON-PROFIT ORGANIZATION
☒ OTHER *(Specify)* WATERSHED COUNCIL

13. FUNDING INFORMATION

	Recipient	BLM
This obligation	$ 0.00	$ 0.00
Previous obligation	$ 0.00	$ 0.00
Total Obligation	$ 0.00	$ 0.00
Share Ratio	%	%

14. ACCOUNTING AND APPROPRIATION DATA

N/A

15. PROJECT TITLE AND BRIEF SUMMARY OF THE PURPOSE AND OBJECTIVES.

SMITH RIVER WATERSHED COUNCIL AND BLM ASSISTANCE AGREEMENT IS ESTABLISHED TO 1) PROVIDE A MEANS OF JOINT COOPERATION BETWEEN BLM AND THE COUNCIL IN ORDER TO IMPROVE WATERSHED HEALTH WITHIN THE SMITH RIVER WATERSHED AND 2) PROVIDE FOR THE TRANSFER OF FUNDS AND OR MATERIALS FROM BLM TO THE COUNCIL FOR PROJECT DESIGN, CONTRACT ADMINISTRATION, AND PROJECT IMPLEMENTATION ACTIVITIES ASSOCIATED WITH RESTORATION OF THE SMITH RIVER WATERSHED.

16a. NAME AND TITLE OF SIGNER *(Type or print)*

PAUL DAILEY, CHAIR

17a. NAME AND TITLE OF ASSISTANCE ORDERING OFFICER *(Type or print)*

STEVEN D. SHAPIRO, ASSISTANCE OFFICER

16b. RECIPIENT

Paul Dailey
(Authorized Signature)

16c. DATE SIGNED
7-25-02

17b. UNITED STATES OF AMERICA
BY Steven Shapiro
(Signature of Assistance Officer)

17c. DATE SIGNED
8/5/02

ASSISTANCE AGREEMENT
FOR COOPERATIVE PROJECTS
Between
The Smith River Watershed Council
And
The Bureau of Land Management, Coos Bay District
HAA021E00
1 July 2002

The Smith River Watershed Council is a group formed, and subsequently sanctioned by the local county commissioners in support of the Oregon Plan for Salmon and Watersheds, to assess conditions in their watersheds and to assist the community in developing and implementing activities in the interests of watershed health.

The Bureau of Land Management is a land management agency within the Department of Interior committed to the wise use of resources, ecosystem management, and improvement in watershed health.

I. Purpose: This Assistance Agreement is entered into by the Bureau of Land Management (hereinafter referred to as BLM) and the Smith River Watershed Council (hereinafter referred to as the Council), for the following purposes:

A. To provide a framework to coordinate stream, riparian, and upland enhancement projects and management practices within the Smith River Watershed, on public and private lands, that will improve watershed health.

B. To coordinate comprehensive planning, assessment and programs for the strategic management of the Smith River Watershed.

C. To enhance habitat in the Smith River Watershed.

D. To provide joint opportunities for community-based education on the values and functions of the Smith River Watershed.

E. To share resources, between BLM and the Council, including equipment, office space, and personnel expertise, where mutual benefit to public land management and overall watershed health would be realized.

F. To provide a mutually beneficial process for BLM and the Council to jointly identify, communicate and coordinate actions of common concern relating to the management of public lands and resources.

G. To meet legal, social, and economic expectations of local communities by coordinated watershed enhancement projects.

II. Objective: The Objective of this Assistance Agreement is to 1) provide a means of joint cooperation between the BLM and the Council in order to maintain or improve watershed health within the Smith River Watershed and 2) provide for the transfer of funds and/or materials from BLM to the Council for project design, contract administration, and project implementation activities associated with enhancement of the Smith River Watershed.

III. Authority:

A. ***Jobs-in-the-Woods***, Public Law 106-113, which states "Notwithstanding any other provision of law, for fiscal year 1999 the Secretaries of Agriculture and the Interior are authorized to limit competition for watershed restoration project contracts as part of the "Jobs in the Woods" component of the President's Forest Plan for the Pacific Northwest to individuals and entities in historically timber-dependent areas in the States of Washington, Oregon, and northern California that have been affected by reduced timber harvesting on Federal lands." P.L. 106-113 is considered as legislative authority to provide funding for watershed restoration projects to "individuals and entities in historically timber-dependent areas."

B. *Wyden Amendment - Watershed Restoration and Enhancement* provides a framework by which OR/WA BLM may enter into contracts or agreements to permit funding work on non-BLM land. The Omnibus Consolidated Appropriations Act of 1997, Wyden Amendment (Public Law 104-208, Section 124), as amended (Public Law 105-277, Section 136), states:

"appropriations made for the BLM may be used by the Secretary of Interior for the purpose of entering into cooperative agreements with the heads of other Federal agencies, tribal, State, and local government, private and nonprofit entities, and landowners for the protection, restoration, and enhancement of fish and wildlife habitat and other resources on public or private land..."

BLM policy in regards to the Wyden Amendment states: To protect the Government's interest when the BLM and private parties are entering into a contract or agreement, e.g. for construction of improvements or protection from liability, create an enforceable "land use agreement" which defines the obligations and remedies of the parties.

i. The agency is bound by minimum implementing requirements including:
    1. BLM has funds available to enter into such agreements and the expenditure of those funds must be in the public interest.

2. The project must have direct benefit to biotic resources on public land administered by BLM in the watershed, and must be more critical to the health of those biotic resources than the effect that work on public land would have on those resources.

C. *Secure Rural Schools and Community Self Determination Act of 2000*, Public Law 106-393 (16 U.S.C. 500) authorizes the BLM and FS to: 1) Promote the stabilization of payments to counties to provide funding for schools and roads as a supplement to other available funds 2) Create additional employment opportunities through, projects that improve the maintenance of existing infrastructure, implement stewardship objectives that enhance forest ecosystems and restore and improve land health and water quality 3) Improve cooperative relationships among the people that use and care for Federal Lands and the agencies that manage these lands. *Title II* of the Act addresses Special Projects on Federal Lands, Cooperative Agreements and Contracts. *Agreements* may be entered into with Federal Agencies, State and local governments, private and nonprofit entities, and landowners for the protection, restoration and enhancement of fish and wildlife habitat and other resource objectives consistent with the purposes of this title on Federal land and on non-Federal land where projects would benefit these resources on Federal land.

i. The agency is bound by minimum implementing requirements including:
   1. The BLM - Coos Bay District Resource Advisory Committee (RAC) recommends and the Designated Federal Official approves the use of Title II funds to enter into such agreements and the expenditure of those funds must be in the public interest.
   2. The project must have direct benefit to biotic resources on public land administered by BLM in the watershed.

IV. Benefits to the Public: This agreement will support a means for providing an effective cooperative working relationship between the BLM and the Council, and combine technical expertise, funding and services toward the goal of enhancing aquatic and upslope habitats to benefit fish and wildlife species and water quality

V. Benefits to the Council: Increased funding, working relationship and functional partnership in the accomplishment of watershed enhancement projects.

VI. Project Coordination / Management Plan:

A. Responsibilities, Coordination, Environmental Planning, Project Implementation, and Monitoring.

i. BLM agrees to:
    1. Designate BLM personnel from each Field Office where the watershed is located, as the primary agency representatives to serve on Council committees and be the contact for initiation and consultation on issues of mutual interest and management proposals.
    2. Make available resource professionals for technical assistance, when personnel and requested skills are available and approved by BLM. BLM will inform the Council if requested assistance cannot be provided within the needed time period.
    3. Make recommendations, when requested, in a technical advisory capacity, on project design, and funding and implementation priority, on private lands. Make decisions on project design, and funding and implementation priority on federal lands.
    4. Provide liaison with various government bodies, groups, and individuals, when conducting watershed analysis on federal lands or when involved in watershed assessments or a member in updating Council Watershed Action Plans.
    5. Provide reimbursement to the Council.
    6. Provide the opportunity for Smith River Watershed Council personnel to participate in, and monitor on going projects in the Smith River Watershed.

ii. The Council agrees to:
    1. Provide the opportunity for BLM personnel to serve on Council committees.
    2. Inform BLM of upcoming meetings and technical assistance requests in advance, and keep BLM informed of anticipated needs and scheduling.
    3. Explore other means for project planning, design, implementation, and monitoring work to fulfill watershed enhancement purposes including services of watershed Council employees, volunteers, private consultants and partnerships.
    4. Make decisions on project design, and funding and implementation priority on private lands, and coordinate interests, plans and resources on private lands, where negotiations are developing or agreements have been finalized.
    5. Obtain a Land Use Agreement prior to commencement of project work.
    6. Meet deadlines set by the BLM for submitting project proposals, signed Land Use Agreements, or other

documentation necessary for BLM to commit Federal funds for restoration activities.

B. Equipment and Facilities

i. BLM agrees to:

1. On an as needed basis, provide equipment for program work including water quality equipment, survey equipment, fisheries equipment, and other general supplies on a "check-out" basis, in accordance with property management regulations.
2. Make office space and use of BLM computers available for special projects when requested by the Council, on an as available basis, and approved by the BLM.
3. Allow use of conference rooms or other facilities, as scheduling allows, for Council meetings.
4. Supply the Council 1:24,000scale USGS topographic maps, when requested, for coordinated projects.

ii. The Council agrees:

1. Loaned equipment or space may be recalled or rescinded at any time when needed by the government, in such cases as a planned or emergency BLM activity.
2. Before requesting BLM equipment and supplies, reasonable attempts to procure or loan equipment and supplies from other sources including donations and "in-kind" will have been exhausted for a particular project.
3. Damaged, lost, or stolen equipment will be repaired or replaced.
4. Normal maintenance of equipment is the responsibility of the Council.
5. Request for office space and computer use for special projects will be requested through the BLM District Restoration Coordinator.
6. Requests for conference room use will be made in advance as far as possible.

C. Data Sharing

i. BLM agrees to:

1. Forward single printed copies of non-proprietary watershed information when requested by the Council including completed watershed analysis iterations and appendix files, data files, maps, surveys, and inventories and other pertinent reports.

2. Maintain recent completed electronic watershed analysis iterations on the District web site.
3. Transfer single duplicate electronic copies of surveys and inventories such as ODFW fisheries surveys, BLM temperature monitoring, stream flow, and other non-proprietary information when specifically requested.
4. Retain one set of aerial photographs, available for the Council and public checkout on a first-come, first-served basis.
5. Maintain phone numbers and e-mail addresses for Field Office Managers and Resource Professionals.

ii. The Council agrees:
1. Requests for information are necessary for watershed improvement or enhancement project planning, implementation, monitoring, or watershed action plan revision.
2. To forward Council survey information to BLM when specifically requested for a coordinated project. Such information may include information pertaining to water temperature, aquatic habitat, roads and culverts, flow and wildlife surveys.
3. To set up and maintain telephone numbers and e-mail addresses as soon as practicable.

VII. Cooperative Opportunities:

A. Partnerships

i. BLM and the Council can form partnerships with various individuals, groups, and agencies for the purpose of meeting watershed enhancement objectives.

ii. Projects that include any government funding must comply with federal, state, and local laws, regulations, police, and permit requirements. Examples include the Endangered Species Act (ESA), The National Environmental Policy Act (NEPA), Oregon Department of Environmental Quality Water Quality Standards, and Division of State Lands Fill and Removal Law.

iii. Jointly provided liaison with various government bodies, groups, and individuals, where the Council and BLM have shared interest, and the project benefits BLM land and water resources and Council stakeholders.

iv. Coordinate joint actions with County Commissioners, Cities, and other interested parties.

VIII. Terms of Agreement

A. This agreement shall be effective for a period of 5 years after signing by the Assistance Officer, unless terminated prior to that date.

IX. Financial Support

A. This cooperative agreement shall be funded by the issuance of Task Orders (TO's) based on the availability of BLM funding. The Council hereby releases the BLM from all liability due to failure of Congress to appropriate funds for this agreement.

i. TO's will specify the Not To Exceed (NTE) amounts. The BLM shall not be obligated to pay for nor shall the Council be obligated to perform any effort that will require the expenditure of Federal funds above the NTE amount specified in that TO.

ii. TO's will be issued in writing by the Assistance Officer and must be signed by both the authorized responsible official and the Assistance Officer in order to be effective.

iii. A Task Order will contain:

1. The specifications or statement of work that will be performed under that specific TO.
2. A list of any deliverable items that are required.
3. Any necessary drawings and/or location map. Maps will have Township, Range, and section, and a North arrow.
4. The delivery schedule or completion time, which has been negotiated, based on the level of difficulty, site location, weather, etc.
5. A NTE amount for the task.
6. Any other detail or information necessary.

B. In the event funds are obligated but not expended in one Fiscal Year, those funds can be carried forward and expended in a subsequent fiscal year.

C. Payments: Electronic Funds Transfer Payments

i. Payment under this agreement will be made by the Government by electronic funds transfer (through the Treasury Fedline Payment System (FEDLINE) or the Automated Clearing House (ACH)).

ii. Afterward, but no later than 14 days before an invoice or Agreement-financing request is submitted, the Council shall designate a financial institution for receipt of electronic funds transfer payments (SF-3881), and shall submit this designation to the following address:

Bureau of Land Management
National Business Center, BC-630
Denver Federal Center, Bldg. 50
Denver, CO 80225-0047

iii. If a designation has been submitted to the BLM under a previous agreement, it is not necessary to complete another SF-3881 unless you are changing your designation of financial institution.

iv. Payments will be based on reviewed and approved invoices and made in arrears.

v. The Smith River Watershed Council shall be entitled to reimbursement* or advance payment* at least quarterly upon submission of an original Request for Advance or Reimbursement, Standard Form (SF) 270 to the AR. Payments shall be governed by the provisions of 43 CFR Subpart C, Section 12.61 and 12.81.

vi. If advance payments are made the Council must submit a Federal Cash Transaction Report, SF 272 to the Assistance Officer 15 working days following the end of each quarter.

vii. Advance payments shall be made only in amounts necessary to meet current disbursement needs and shall be scheduled so that the funds are available only immediately prior to their disbursement

X. Procurement Procedures

A. National policy is to place a fair share of purchases with minority business firms. The Departments of the Interior is strongly committed to the objectives of this policy and encourages all recipients of its grants and cooperative agreements to take affirmative steps to ensure such fairness. Positive efforts shall be made by recipients of Federal funds to utilize small businesses, minority-owned firms, and women's business enterprises, whenever possible. Recipients of Federal awards shall take all of the following steps to further this goal:

i. Ensure that small businesses, minority-owned firms, and women's business enterprises are used to the fullest extent practicable.

ii. Make information on forthcoming opportunities available and arrange timeframes for purchases and contracts to encourage and facilitate participation by small businesses, minority owned firms, and women's business enterprises.

iii. Consider contract process whether firms competing for larger contracts intend to subcontract with small businesses, minority owned firms, and women's businesses.

iv. Encourage contracting with consortiums of small businesses, minority-owned firms and women's business enterprises when a contract is too large for one of these firms to handle individually.

v. Use the services and assistance, as appropriate, of such organizations as the Small Business Development Agency in the solicitation and utilization of small business, minority-owned firms and women's business enterprises.

XI. Property Management and Disposition

Any BLM property used or other property acquired under this agreement, including intangible property such as copyrights and patents shall be governed by the provisions of 43CFR, Subpart F, Section 12.931 through 12.937.

XII. Deliverables and Reports

Submit one copy of an annual performance report to the Assistance Representative within 90 days after the end of the fiscal year. The performance report must be prepared in accordance with 43CFR, Subpart F, Section12.951 and address items such as a comparison of actual accomplishments with established goals, reasons why goals may not have been met, cost overruns and any other pertinent information.

XIII. Key Officials

A. Assistance Officer (AO)
Steven D. Shapiro, OR952
Bureau of Land Management
333 SW First Ave
Portland, OR 97204
503-808-6227

B. Assistance Representative
Glenn R. Harkleroad, BLM – Coos Bay District
Bureau of Land Management
1300 Airport Lane
North Bend, OR 97459
541-751-4361

C. Responsible Official for the Smith River Watershed Council
Paul Dailey, Chair
Smith River Watershed Council
22101 Lower Smith River Road
Reedsport, OR 97467-9733

Phone: 541-271-5848

XIV. Terms and Conditions

A. Direct contacts between BLM and the Council are in no way limited by this agreement. Such contacts are encouraged to promote more effective communication and coordination.

B. This agreement in no way supersedes other policies, authorities, court decisions, or jurisdictions of BLM or the Council, or requires either party to expend any sum in excess of its respective appropriations, nor does this Assistance Agreement create any new rights of responsibilities for either party regarding existing laws, statutes, or regulations.

C. Any inconsistency in this agreement shall be resolved by giving precedence in the following order: (a) Any national policy requirements and administrative management standards; (b) requirements of the applicable OMB Circulars and Treasury regulations; (c) 43 CFR Part 12; (d) these terms and conditions; and (e) all agreement sections, documents, exhibits, and attachments.

D. This agreement in no way supersedes or alters the decision authorities of the BLM State Director or District line managers.

E. Amendments, supplements, or revisions to this Assistance Agreement may be proposed by any party to the agreement and shall become effective upon formal approval of all parties.

F. This agreement may be modified by written agreement signed by both a Council Official, after approval by the Council, and the Assistance Officer. Administrative changes (e.g., names changes), which do not change the project management plan, NTE amount, etc., or otherwise affect the Council may be signed unilaterally by the Assistance Officer.

G. Representatives of BLM and the Council may meet annually to discuss the terms of this document and other matters of mutual concern and benefit.

H. The Council and BLM may modify this Assistance Agreement or enter into supplemental agreements as the need arises.

I. No member of or delegate to Congress, or resident commissioner, shall be admitted to share any of this agreement, or to any benefit arising from it. However, this clause does not apply to the agreement to the extent that it is made with a corporation for the corporation's general benefit.

J. Any party to this Assistance Agreement may terminate it by providing thirty (30) calendar days written notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination.

K. Reasonable efforts will be made by both BLM and the Council to resolve any dispute arising under or relating to this Assistance Agreement, with unresolved disputes subject to binding arbitration.

L. Methods of sampling and monitoring will follow the protocols established in attached supplement "A".

General Provisions

A. National Policy Requirements and Administrative Management Standards. All applicable national policy requirements and administrative management standards as set forth in the Office of Management and Budget, Financial Management Division, Directory of Policy Requirements and Administrative Standards for Federal Aid Programs are incorporated by reference.

B. 43 CFR Part 12, Administrative and Audit Requirements and Cost Principles for Assistance Programs is incorporated by reference.

C. Federal Acquisition Regulation (FAR) at 48 CFR Part 31 is incorporated by reference.

D. 43 Code of Federal Regulations (CFR) Part 12, Appendix A to Subpart D, Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transaction and completed Form DI-2010 are incorporated by reference.

E. 43 CFR Part 12, Appendix C to Subpart D, Certification Regarding Drug-Free Workplace Requirements, Alternate I (Grantees other than individuals) and completed Form DI-2010 are incorporated by reference.

F. Single Audit Act Amendments of 1996, Public Law 104-156, 110 Stat. 1396, 31 U.S.C. 750 1-7 and 43 CFR, Part 12, is incorporated by reference.

G. Pursuant to Sec. 307 of the Department of the Interior and Related Agencies Appropriations Act of 1998, Public Law 105-83, 111 Stat. 1590, be advised of the following:

   In the case of any equipment or product that may be authorized to be purchased with financial assistance provided using funds made available in this Act, it is the sense of the Congress that entities receiving the assistance should, in expending the assistance, purchase only American-made equipment and products.

   Recipient agrees to follow the procedures in 43 CFR Part 12, Subpart E, Section 12.700 - Buy American Requirements for Assistance Programs.

H. Grant/Cooperative Agreement Provision. Recipient shall not use any part of the appropriated funds from the Interior and Related Agencies Appropriation Act, FY 1998, for any activity or the publication or distribution of literature that in any way tends to promote public support or opposition to any legislative proposal on which Congressional action is not complete.

Attachments: 1 – Land Use Agreement
2 - Supplement "A"

LAND USE AGREEMENT (LUA)

by

_____Watershed Council

and

(Landowner)

for

Project

THIS Land Use Agreement (LUA), made and entered into this ___day of_____ 20_, by and between _____hereinafter called Owner(s), for themselves, their heirs, executors, administrators, successors, and assigns, and the Watershed Council, hereinafter called the Council on behalf of the Bureau of Land Management and other interested parties.

The Owners have an interest in_____, and the Council wishes to cooperate with the Owners to restore and/or enhance and protect fish and wildlife habitat.

In consideration of the above premises, the parties agree as follows:

I. **Purpose of Land Use Agreement.** The **LUA** is to facilitate cooperation between the parties in a specific habitat enhancement and restoration effort, which is delineated and described in Attachment 1, the Project Work Plan. The parties have a common interest in improving the current condition and/or expanding the extent of habitat located on the _____property. This **LUA** provides for the limited interchange of services, equipment, and funds to meet the objectives of the project.

II. **Objectives.** The objectives of this cooperative effort are:

A. To help reverse the trend of declining quality and quantity of fish and wildlife habitats.

B. To facilitate restoration and enhancement of aquatic, riparian, and adjacent upland habitats. (Attach copy of Project Work Plan).

III. **Term of agreement.** The term of this **LUA** shall be in effect for a period of _____years, commencing on the date of acceptance of this agreement by the owner.

IV. **SPECIFIC OBLIGATIONS OF THE PARTIES.**

A. The _____**Council/Association** obligations in accomplishing the objectives of this **LUA** are:

1. Provide biological and technical data, advice, and assistance in project planning, design, implementation, and maintenance in consultation with the Bureau of Land Management (BLM) project manager.

2. Assist the Owners in securing Federal, State, and County permits.

3. Inform the landowner that construction activities can begin when:

   a. All appropriate State and local permits have been obtained, and

   b. Written notification from the BLM Project Manager has been received stating that the project complies with the National Environmental Policy Act, the Historic Preservation Act, the Clean Water Act, the Endangered Species Act, and applicable federal regulations.

4. Cooperate as is necessary with the Owners in maintaining the project area during the term of this **LUA**.

5. Request landowner permission for access prior to entering the project area for monitoring or reviewing project condition (including cooperating agency personnel). The Council and/or cooperating agency will request landowner permission a minimum of 14 days prior to proposed access, unless otherwise agreed to by the landowner.

6. Periodically review/monitor the project area with the Owners and if needed, develop a maintenance work/cost share plan if not previously identified in the project work plan.

7. Provide cost share assistance as identified in the attached project work plan. Total cost share may include staff time; the value of equipment, labor, plant materials for establishing native plant communities for fish and wildlife food and cover; and/or funds provided by the Association/Council and/or the BLM. If applicable and identified in the project work plan for this project, the landowner will receive a direct payment for reimbursement of costs not to exceed $_____.

B. The **Owner** obligations in accomplishing the objectives of this **LUA** are:

1. Obtain required Federal, State, and local permits for the project such as water rights/storage, fill/removal.

2. Insure that no construction activities begin until notification has been received from the Council and BLM project managers that all applicable Federal, State, and local regulations have been met and all necessary permits have been issued.

3. Manage the project area, as delineated and described in the Project Work Plan under goals. (The project area will be defined by the landowner with agreement from the Association/Council).

4. Grant permission for access to the Council and cooperating agency (BLM) personnel for the express purposes of project review and monitoring as described in A6 (above) under watershed councils/association responsibilities.

5. Periodically evaluate/monitor the condition of the project area with the Council and if not previously described in the project work plan, develop an annual maintenance work/cost share plan.

6. Consult with the Council and cooperating agency (BLM) prior to conducting maintenance activities not previously described the project area work plan. Emergency maintenance can be conducted as needed but will be reported to the Council for inclusion in their annual performance report to the cooperating agency (BLM) (as per Assistance Agreement #HA******).

V. **TERMINATION.** This **LUA** may be terminated for the following conditions:

A. Termination for Cause

1. The _____ Watershed Council, with BLM concurrence, may terminate this agreement in whole, or in part, at any time during the Term of the Agreement, if and when the Owner(s) fail to comply with the obligations of this **LUA**, upon thirty days written notice to the Owner delivered by certified mail or in person.

2. If this Agreement is terminated for cause, the Owners will repay the Watershed Council and the BLM the amount of the invoiced services and funds provided during project implementation.

B. Termination for Convenience

1. The _____ Watershed Council, with BLM concurrence, may terminate this **LUA** in whole, or in part, without prejudice to obligations existing prior to termination upon 30 days written notice to the Owner(s), delivered by certified mail or in person.

2. If the Owner(s) terminate this **LUA** for convenience prior to the date specified in the Term of Agreement, they agree to repay the Watershed Council and BLM the amount of the invoiced services and funds provided during project implementation.

VI. LIABILITY. Each party agrees that it will be responsible for its own acts and the results thereof and shall not be responsible for the acts of the other party and the results thereof.

IN WITNESS THEREOF, the parties have executed this **LUA** on the day, month, and year last indicated:

Landowner(s):

By: _____ Date:
(Signature)

_____ Date:
(Signature)

_____Watershed Council:

By: _____ Date:
(Signature)

Title:

Bureau of Land Management

Received date:

Approved: _____Date:
Field Manager Bureau of Land Management

1 Attachment
1 - Project Work Plan (____pp)

WHITE PAPER

WHAT IS SCIENCE?

OREGON CATTLEMEN'S ASSOCIATION

Pat Larson
Science and Natural Resource Advisor
February, 2002

'Science' means the systematic enterprise of gathering knowledge about the universe and organizing and condensing that knowledge into testable laws and theories.

Fundamental science, is generally not interested in how a specific system behaves. Rather, the goal of science is to discover the fundamental laws of Nature, which means we are interested in finding that few set of rules that apply to all objects and systems in the Universe.

Natural Resource disciplines such as forestry, wildlife biology, rangeland ecology, plant physiology, entomology, etc. research is not conducted at the level of establishing fundamental science theory. The fundamental laws of Nature are generally described by Physicists and/or Chemists. It takes Physics and Chemistry to properly identify the components of the natural resources experimental results, and ultimately what natural resource researchers strive to establish is an application of one of the basic physical laws.

THE SCIENTIFIC METHOD OF SAMPLING & MONITORING TECHNIQUES

The natural resource scientists who use statistical methods to reach conclusions all approach their problems by the same general procedure, commonly known as "the scientific method." The method is broken down into several stages:

1. State the problem.
2. Formulate the hypothesis.
3. Design the experiment or survey.
4 Make observations (collect data).
5. Interpret the data.
6. Draw conclusions.

Problem Statement

Formulation of a statement of the problem in written form helps solidify the idea to be studied and allows a scientist to proceed with the next steps in a focused manner.

"Hypothesis"

The hypothesis is the expected outcome if the experimenters speculations are true. A good hypothesis is comprehensive enough to explain a phenomenon and predict unknown facts and yet is stated in a simple way. A literature search will indicate whether the problem has been researched, whether a body of studies exists that yielded similar results, and whether or not additional study will make a worthwhile contribution.

Design the Experiment or Survey

An experiment is designed to test the hypothesis through controlled experimentation. It consists of a set of similar objects that receive a specific treatment and then a response is measured. Design considers questions such as: what variables should be measured? How will the measurements be taken and with how much precision? What treatments or conditions should be placed on the subjects to test the hypothesis? What samples will be measured out of the population of interest? **In general samples meet the following criteria : random, representative of the population, sufficiently large, controlled for extraneous variables.**

Random sampling is intended to avoid bias in the selection of plots on the ground. Such plots may

not always fall in a convenient area close to a road or trail. A representative sample of the population refers to the subject being sampled. If tall and short grass species are present in an area, then the plots sampled should each have tall and short grass present. Enough samples then must be taken to reach an adequate sample size to account for the variability in the plant community. Variability on a site may be due to a soil change, plant community variation, moisture difference within a site, climatic changes from season to season or year to year, etc.

1. **Sampling must be carried out in a rigorous manner.**
2. **The study should be free from errors except for the variations that are due to the limitations of the equipment being used.**
3. **Bias should be avoided.**
4. **Experimental design and equipment should not be changed in the middle of an experiment.**
5. **Unusual values, outliers, should be checked to see whether or not it is due to a sampling error.**
6. **Good notes should be taken and kept until the study is completed. Summaries of the data are not sufficient for statistical analysis.**
7. **Conclusions should only be made after proper analysis is completed.**

The following articles and books discuss ecological field experimental designs and treatment affects.

R..A. Fisher and J. Wishart. 1930. The arrangement of field experiments and the statistical reduction of the results. Imperial Bureau of Soil Science (London), Technical Communication Number 10:1-23.

"No one would now dream of testing the response to a treatment by comparing two plots, one treated and the other untreated".

Snedecor, G.W. and William Cochran. 1967. Statistical methods. Iowa State University Press. Ames, IA.

This text is a standard reference for researchers in designing and analyzing data collected on projects. The theories of math are used to provide an objective result in determining when numbers are different due to patterns occurring within a population that are not due to chance.

Hurlbert, Stuart H. 1984. Pseudoreplication and the design of ecological field experiments. Ecological Monographs. Ecological Society of America. 54(2).

There are five components to an experiment: hypothesis experimental design, experimental execution, statistical analysis and interpretation. Clearly the hypothesis is of primary importance, for if it is not, by some criterion, "good," even a well-conducted experiment will be of little value.

It is clear that experimental design and experimental execution bear equal responsibility for the validity an sensitivity of an experiment. In a practical sense execution is more critical than design. Errors in execution can and usually do intrude at more than one point in an experiment, come in greater numbers of forms, and are often subtler than design errors. The effects of undetected or undetectable errors make experimental execution critical. Statistical analysis and interpretation are the

least critical aspects of experimentation, in that if purely statistical or interpretive errors are made, the data can be reanalyzed. On the other hand, the only complete remedy for design or execution errors is repetition of the experiment.

Professional Journals and Manuscripts

Professional journals require that specific criteria be met when manuscripts are submitted for consideration as a printed article. Popular journals (outside the science community) print opinions, observations, and some journals provide literature on computer modeling techniques. Literature reviews are rarely printed in scientific journals unless they are part of a manuscript that includes data and results of an experiment. Government reports and planning documents are not considered science, because they are often a report about scientific information selected to justify a position or decision. Government surveys also are not considered scientific information because survey's are generally intended to serve as part of an inventory.

Science journals focus on manuscripts that contribute new or unique information to the body of science. The journals have standards and criteria that can only be met when data and statistical analyses are included. Professional organizations conduct a rigorous edit of manuscripts using a blind national review provided by scientists who have expertise on the topic being reported. The rigors of the review and requirements for data and analyses are intended to ensure a level of confidence that the experimental design, execution, and results. The foundation of the science requires the complete and open exchange of data, procedures and materials. When scientists expose their ideas and results to independent testing and replication by other scientists, they can abandon or modify accepted conclusions if confronted with more complete or reliable evidence. Abiding by these principles provides a mechanism for self-correction that is the foundation of the credibility of science. For example:

Larsen, R.E., W.C. Krueger, M.R. George, M.R. Barrington, J.C. Buckhouse and D.E. Johnson (1998) provided a classification of published literature regarding livestock influences on riparian zones and fish habitat. The document used a classification that included the elements described in the scientific methodology as well as a statistical analysis of the data when they categorized the literature. The authors reported that of 2300 stream ecology papers reviewed by the group, only 1/3rd were scientifically based; 2/3rds were the "opinions " of the authors.

There is need and urgency to observe all the steps required for published literature to be considered scientific information. A scientist who writes an article or publishes an article may or may not be reporting scientific information, but may be speculating about how various components of science could be linked. Biological events are rarely captured in short essays with any meaningful evidence of their validity within the body of science.

Scientists and nonscientists bear the burden of identifying the type of articles where information is found when researching a topic. They also must scrutinize articles to determine if the idea has presented more complete or reliable evidence than a current theory on the topic. There are generally 6 categories of types of articles that are published in popular and scientific journals:

1. Belief or Opinion - This type of article contains no data to support a position.

2. Observation - An observation contains little or no measured data to support a position. An outcome can be observed but there is no way to distinguish between factors that may have contributed to the outcome. Surveys that do not include measurements that are objectively analyzed

through rigorous statistical testing fit this category.

3. Literature reviews - Literature reviews are no better than the information reviewed. If belief and observation are used in the literature review there is little value in the document. Similarly if research is omitted or misquoted the review has little value. The purpose of a literature review is to formulate hypotheses and organize a body of research. A literature review is not scientific research.

4. Computer models - Computer models are not science and do not use the scientific methodology to test a hypothesis. Computer models are an attempt to simplify and simulate a natural system with mathematical equations. A model is no better or worse than the quality of the assumptions, information, and the mathematical relationships used to form the model, and their ability to generate results or trends that relate to the real world is largely dependent upon the assumptions found in the model. Models are not research in a classical sense but are a simulation based upon existing information. Their value is primarily to find gaps in existing knowledge and as a tool for hypothesis generation prior to an experiment being executed.

5. Case studies - Case studies represent experimental research when scientific methodology is used to test a hypothesis and a level of statistical confidence has been applied to the conclusion. Case studies provide information regarding a specific set of conditions, but the degree of repeatability of the experiment is unknown, because the study is made at a few locations under conditions that may not exist at another location.

6. Body of experimental research - A body of experimental research is developed when case studies are repeated through time and space under varied experimental conditions. This process forms the foundation of moving from a hypothesis (initial experimentation) to a theory (experimentation repeated numerous times through time and space) to the formation of a scientific law (years of experimentation has yielded a single predictable result).

The Steps Required for Publication as "Best" Science

After a study is executed, analyzed, and results can be identified, a manuscript can be prepared and submitted to an appropriate professional journal for publication. In general, to meet the rigors of a science journal review, the following criteria have been met for publication:

1. Peer review. The information has been critically reviewed by other persons who are qualified scientific experts in that scientific discipline. The criticism of the peer reviewers has been addressed by the proponents of the information. Publication in a refereed scientific journal usually indicates that the information has been appropriately peer-reviewed.

2. Methods. The methods that were used to obtain the information are clearly stated and able to be replicated. The methods are standardized in the pertinent scientific discipline or, if not, the methods have been appropriately peer-reviewed to assure their reliability and validity.

3. Logical conclusions and reasonable inferences. The conclusions presented are based on reasonable assumptions supported by other studies and consistent with the general theory underlying the assumptions. The conclusions are logically and reasonably derived from the assumptions and supported by the data presented. Any gaps in information and inconsistencies with other pertinent scientific information are adequately explained.

4. Quantitative analysis. The data have been analyzed using appropriate statistical or quantitative methods. The use of descriptive statistics alone (presentation of means, ranges, whisker box

graphs, etc.) do not meet this requirement.

5. Context. The information is placed in proper context and limitations are noted. The assumptions, analytical techniques, data, and conclusions are appropriately framed with respect to the prevailing body of pertinent scientific knowledge.

6. References. The assumptions, analytical techniques, and conclusions are well referenced with citations to relevant, credible literature and other pertinent existing information.

Most professional journals require a "blind" national review before articles are approved for printing. A "blind" national review is an attempt to provide an objective assessment of the quality of the work as well as the writing and analysis of the study. Authors are not in contact with the peers who are conducting the review and usually do not know who is providing edits and comments about their work.

The criteria above can be found in the State of Washington's Administrative Code as guidance to determine "what is best available information"?

Examples of Opinion/Observation and Scientific Information

ESA Listing of the *Theylypodium howelli var. spectabilis*

In July, 1995 The Nature Conservancy and a Fish and Wildlife Service botanist visited a Clover Creek site located in Union County near North Powder, Oregon. They observed (no data was collected, only ocular observations were made) that livestock had consumed the plant, *Theylypodium howelli var. spectabilis* (a member of the mustard family of plants which has a small pink flower) at that site, and they observed an adjacent area that was not subject to grazing had plants that were not consumed. The observations were made part of the documentation for ESA listing.

ESA Listing of the *Silene spaldingii*

On February 27, 1995, a petition was filed dated February 23, 1995 from the Biodiversity Legal Foundation of Boulder, Colorado; the Montana and Washington Native Plant Societies; and Mr. Peter Lesica of Missoula, Montana, to list *Silene spaldingii* within the conterminous United States as threatened or endangered under the Act. The petition submitted information stating that this species is threatened by competition with non-native and woody vegetation, improper livestock grazing practices, improper herbicide application, inbreeding depression, and fire suppression.

The listing took place during 2000 and was based on statements such as "although historical data on *Silene spaldingii* distribution and population size are incomplete, this species was likely much more widespread in the past, based on the former distribution on suitable Palouse habitat."

Scientifically, there is no biological meaning in the observations presented to list these two species of plants. To speculate that either population is threatened using the reported observations creates a prejudicial and arbitrary decision unsubstantiated by quantifiable data to support the observations of the population size and distribution.

Both listings were made based on reports that contained documentation of field observations which were submitted with commentary on a cause and effect that has never been established in science literature. The reports submitted in the petition failed to meet criteria 1-6 described above and the literature references failed to include publications

from structured experiments specifically addressing the plants. The petitions can only be categorized as "opinion" and "observation".

To be considered petitions based on "scientific information", a complete life history study would need to be presented or referenced. Without a life history there is no knowledge nor understanding about plant abundance, rarity, or response to land uses. The petitions provided no in-depth study of the plants and how they adapt to the site nor their habitat requirements.

Reliance on ocular observations during various periods of the growing season, with or without knowledge of the how the sites are being managed, creates a proposition to list based on pseudoscientific evidence. **Science is not an opinion in a report. Science is a process and product that systematically determines facts beyond subjective opinions.** Until studies are initiated, funded, and completed and reviewed by botanists, plant ecologists and others with expertise to provide objectivity, consideration for ESA listings can not be made on the basis scientific information.

Government Documents and Opinions

The Clean Water Act

TITLE 33 : CHAPTER 26 : SUBCHAPTER III : Sec. 1314. Sec. 1314 states that the Administrator, after consultation with appropriate Federal and State agencies and other interested persons, shall develop and publish, within one year after October 18, 1972 (and from time to time thereafter revise) criteria for water quality accurately reflecting the latest scientific knowledge. The following documents are examples of the sources of data, information and references used in developing water quality criteria.

McCullough, Dale A. 1999. A review and synthesis of effects of alterations to the water temperature regime on freshwater life stages of salmonids, with special reference to chinook salmon. U.S. Environmental Protection Agency Region 10. EPA 910-R-99-010

Poole, G. J. Risley, and M. Hicks. 2001. Spatial and Temporal Patterns of Stream Temperature (Revised) EPA Region 10 Temperature Water Quality Criteria Guidance Development Project.

Torgersen CE, Price DM, Li HW, McIntosh BA. 1999. Multiscale thermal refugia and stream habitat associations of chinook salmon in northeastern Oregon. Ecol Appl 9:301-319.

Frissell C.A., Ebersol J.L., Liss W.J., Cavallo B.J., Poole G.C., Stanford J.A. 1996. Potential effects of climate change on thermal complexity and biotic integrity of streams: Seasonal intrusion of non-native fishes. #CR-822019-01-0. U.S. Environmental Protection Agency, Duluth, MN.

Endangered Species Act

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." The following documents are examples of the sources of data, information and references used in developing NMFS Consultations.

Rhodes, J.J., D.A. McCullough, and F.A. Espinosa, Jr. 1994. A coarse screening process for potential application in ESA consultations. Columbia River Intertribal Fish Commission. Prepared

under NMFS/BIA Inter-Agency Agreement 40ABNF3. December.

Busby, P.J., T.C. Wainwright, G.J. Bryant, L. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-NWFSC-27, 261p.

Forest Ecosystem Management Assessment Team (FEMAT). 1993. Forest ecosystem management: an ecological, economic, and social assessment report of the Forest Ecosystem Management Assessment Team (FEMAT). Forest Service, National Marine Fisheries Service, Bureau of Land Management, Fish and Wildlife Service, National Park Service, and Environmental Protection Agency. July.

The EPA and NMFS government publications are available to the public as part of the agency and services requirements to provide documentation of "best science" and "latest scientific knowledge" when making decisions. **The publications are not science literature and generally fall in the categories of "opinion and observations". The documents do not include data and data analysis, nor are the assumptions and conclusions provided in the narratives appropriately framed with respect to the prevailing body of pertinent scientific knowledge.**

The documents are part of NMFS and EPA "reference lists" intended to ensure best science was used. During professional scientific journal reviews, reference lists are often scrutinized to ensure the authors have provided adequate appeals for authority that support the foundation of an experimental effort. **The government process does not have an objective mechanism in place to cause the authors to edit or change errors in statements which may not accurately reflect the results of cited literature used for support.** The process fails to prevent production of "laundry lists" and does not inspire well critiqued science literature.

Of particular concern regarding the CWA and ESA requirement for "best science" information is the pattern of government publications and issuance of "opinions" that fail to demonstrate a strict adherence to criteria used for assessing what is and what is not science. The documents above discuss the topic of Salmonids and water quality using a literature review style. **The federal laws require documentation that is supported by science which means articles meeting the criteria described for " best available science" should dominate the discussions.**

Science is a process and product that systematically determines facts using objective methods. Science is not an opinion in a report and the above references contain many opinions unsubstantiated in the science literature. These documents generally indicate that human activities cause stream waters to increase in temperature thus harming Salmonids, however science experimentation has not linked most land activities to stream temperatures increases. Science has identified that Salmonids prefer low water temperatures rather than high water temperatures, but their preferences are based on a physiological responses . The Laws of Thermodynamics described in basic Physics texts explain how water heats and cools but does not reference human activities as a factor involved in the event. Neither the "fish science" nor the "water science" have found factors affecting experimental results that can be linked to logging, grazing or mining activities.

Suggesting that stream water always increases in temperature due to the alteration of vegetation and/or land masses through logging, grazing or mining activities is an erroneous linkage and is further exaggerated when linked again to a fish. Science laws do not support the concept nor the link. The following manuscripts are published in both book and journal forms. They all meet the six criteria needed to be "science". They are offered as examples

of Physics and the application of Thermodynamic principles to stream water heating and cooling cycles.

Kirkpatrick, Larry D., G.F. Wheeler. 1995. Physics a world view. Harcourt Brace College Publishers.

von Baeyer, Hans C. 1999. Warmth disperses and time passes: the history of heat. The Modern Library. NY

Larson, L.L. and S.L. Larson. 1996. Riparian shade and stream temperature: a perspective. Rangelands, 18(4) 149152).

Larson, L. and P.A. Larson. 1997. The natural heating and cooling of water. Rangelands 19:6-8.

Larson, L. and P.A. Larson. 2001. Influence of thermal gradients on the rates of heating and cooling of streams. Journal of Soil and Water Conservation. 56:1:38-43

Zwieniecki, M.A. and M. Newton, 1999. Influence of streamside cover and stream features on temperature trends in forested streams of Western Oregon. West. J. Am. For. 14(2) 106-112.
Conclusions

The failure of scientists to identify the proper application of a basic physical law while executing an experiment and ultimately reporting erroneous applications is nearly unforgivable. An error that slips through the "peer review" process by professional journals is forgivable but certainly not acceptable as a common practice. The role of a professional science journal is to provide a rigorous blind, national review by scientists before manuscript acceptance to help ensure the credibility of the work and the integrity of the science organization.

Science debates and spirited discussions about the value of an idea, application of a theory, or dispute with a methodology are all part of the progress of science. These "give and take" narratives should not be confused with an argument or bitter dispute between individual scientists which take place in editorials and letters. The science community is founded in the practice of resolving issues about theory through the application of known physical laws through many time periods and at many different locations using different approaches.

When scientists attempt to test an idea it is important that an argument is made to show that an idea is right, not that the individual is right. If more information comes to light that challenges the idea a good scientist accepts it and tries to find another idea that is more correct. **The worst kind of science is a fight to prove an individual is right, rather than the idea.**

The best way to conduct science is to try and prove an idea wrong, instead of right. Attempting to prove an idea wrong often helps a scientist listen to contradictory theories, which often provide more information for use in testing the idea.

The task of a scientist is not to prove an idea right, because the scientist thought of the idea and already believes the theory. The task is to prove the idea wrong, which requires a scientist to have to work hard, and in the end present a stronger case, especially if the idea can't be proven wrong.

Science References

Bohren, C.F. 1998. Atmospheric Thermodynamics. Oxford University Press. New York, NY.

Halliday, D. and R. Resnick. 1988. Fundamentals of physics. 3rd ed. John Wiley & Sons Inc., New York.

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Motz, Lloyd and Jefferson H. Weaver. 1991. The story of Physics. Plenum Press. New York.

Quinn, T. J. (Terry J.) 1982. Temperature. London ; New York : Academic Press.

Snedecor, G.W. and William Cochran. 1967. Statistical methods. Iowa State University Press. Ames, IA.

von Baeyer, Hans C. 1999. Warmth disperses and time passes: the history of heat. The Modern Library. NY

Wilson Jr., E. Bright. 1990. An introduction to scientific research. Dover Inc. Mineola, NY

Zwieniecki, M.A. and M. Newton, 1999. Influence of streamside cover and stream features on temperature trends in forested streams of Western Oregon. West. J. Am. For. 14(2) 106-112. Conclusions